A STUDY OF THE MANAGEMENT OF EARLY BREAST CANCER

Dissertation submitted in partial fulfillment of regulation for the award of M.S. Degree in General Surgery

(Branch I)

The Tamilnadu
Dr. M.G.R. Medical University
Chennai
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Coimbatore Medical College

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CERTIFICATE

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DECLARATION

I solemnly declare that the dissertation titled **"A study of the management of early breast cancer"** was done by me from 2006 onwards under the guidance and supervision of **Professor Dr. P. GOVINDARAJ, M.S.M.Ch.**

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The Ethics Committee, Coimbatore Medical College has decided to inform that your Dissertation is accepted / ~~Not accepted~~ and you are permitted / ~~Not Permitted~~ to proceed with the above Study.

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Date : 8·10·2007

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INTRODUCTION

Cancer breast is one of the commonest malignant diseases of women next to cancer cervix. It accounts for 30- 40% of all female cancers and is responsible for 20% of cancer related deaths in women. Since 1940 the incidence is steadily increasing. Breast cancer increases with age and it is the most common cause of cancer deaths in women over 65 yrs of age.

Breast cancer survival depends upon the earliest possible diagnosis. 99% cure rates are possible if detected in early stages. Hence the present study.

Aim of This Study

AIM OF THIS STUDY

1. To study about the incidence, epidemiology and environmental factors

   in the genesis of breast cancer in our institution.
2. To study about various methods for detection of early breast cancer.
3. To study about the receptor status in early breast cancer patients.
4. To study about the various histopathological types in early breast cancer.

Review of Literature

REVIEW OF LITERATURE

Breast cancer has been observed and studied since time unknown. Before the 20th century breast cancer was viewed as a uniformly fatal disease without any available or attempted treatment options. The advent of Halstedian radical mastectomy in the 20th century was a major advent for breast cancer. Since the introduction and widespread use of mammography there is an increase in the incidence of detection of small localized, non palpable carcinomas of the breast.

Now women are coming for treatment with smaller and smaller lesions – in the earlier stages which has permitted more conservative approach than was necessary in the past. Reducing the extent of surgery for early breast cancer in the form of lumpectomy with marginal clearance or quadrantectomy might not compromise the outcome.[20, 21, 22].

Axillary lymph node dissection for clinically negative axilla is largely prophylactic, in the current era of lymphatic mapping lymph nodal status can readily documented by a lower morbidity procedure – sentinel lymph node biopsy. If sentinel lymph node biopsy report comes as positive for malignant cells then axillary lymph node dissection can be proceeded [38.]

The benefits of adjuvant systemic therapy in reducing risk of local recurrence or distant relapse have been studied for several decades. The

intent of adjuvant therapy is to eliminate the occult micro metastatis. Breast conserving surgery for early stage invasive cancer when combined with adjuvant irradiation minimizes the risk of local recurrence.[24, 36]

Early breast cancer patients with ER&PR tumours show a significant response to tamoxifen a selective estrogen receptor modulator both in terms of local recurrence and distant metastasis. There is also a reduction in both the ipsilateral and contralateral breast cancer.[29, 30]

Various trials have shown statistically significant disease free and overall survival in patients who receive chemotherapy. Sequential cycles of Cyclophosphamide, methotrexate and 5- fluro uracil or Adriamycin and cyclophosphamide regimen can be used.[1, 17, 24.] Chemotherapy plays an important role in the management of early breast cancer. Despite all these developments it becomes important to individualize patients for the best treatment suited to a given women. In the treatment of breast cancer we must resort to the methods of the ancients namely , cutting out the cancer – surgery, burning it out – radiation or poisoning it - chemotherapy

EARLY BREAST CANCER

The term early breast cancer is applied to tumours of clinical stages I and II a. It is an arbitrary distinction but of clinical utility.[5, 7]

The management of early breast cancer is multidisciplinary. Early breast cancer is best managed by considering

1. Treatment of the breast cancer (treatment of the primary).
2. Treatment of the reminder of the breast (local therapy).
3. Treatment of regional lymph nodes of the axilla. (regional therapy).
4. Treatment of possible occult metastatic disease (systemic therapy).

Patients with early breast cancer have two options either breast conservation surgery with axillary clearance followed by radiotherapy or modified radical mastectomy.

Assessment of the indications for adjuvant therapy following surgery depends on various factors such as size of the tumour, margins of the resected tumour, histological grade, lymph nodal involvement and receptor status of the patients. Patient must be well informed and educated about the advantages and disadvantages of such therapy.

SURGICAL ANATOMY OF THE BREAST [1,2]

DEVELOPMENT: The epithelial lining of the ducts and acini of the breast is developed from ectoderm and the supporting tissue is derived from the mesenchyme. On each side of the ventral surface of young embryos, a thickened band of ectoderm develops (the milk ridge). It extends obliquely from the axilla to the inguinal region. In the human, the whole of this ridge disappears, excepting only a small portion in each pectoral region from which the breast arise. Nipple is either flat or depressed at birth, but later projects beyond the surrounding skin.

The breast consists of glandular tissue (mammary gland proper) which secretes milk. It also has fibro-fatty tissue between its glandular lobes and lobules along with blood vessels, lymphatics and nerves covered by skin.

EXTENT: Vertical: 2^{nd} to 6^{th} rib.

Horizontal: The side of the sternum to the midaxillary line.

It lies over the pectoralis major, seratus anterior and aponeurosis of external oblique from which it is separated by a dense fascia with superficially intervening loose connective tissue (retromammary space). (Fig.1)

NIPPLE AND AREOLA: Cylindrical (or) conical projection at the anterior mammary aspect at the level of 4^{th} intercostal space (nullipara). It is pink (or) dark in colour, traversed by 15-20 lactiferous ducts.

SURGICAL ANATOMY OF BREAST Fig.1

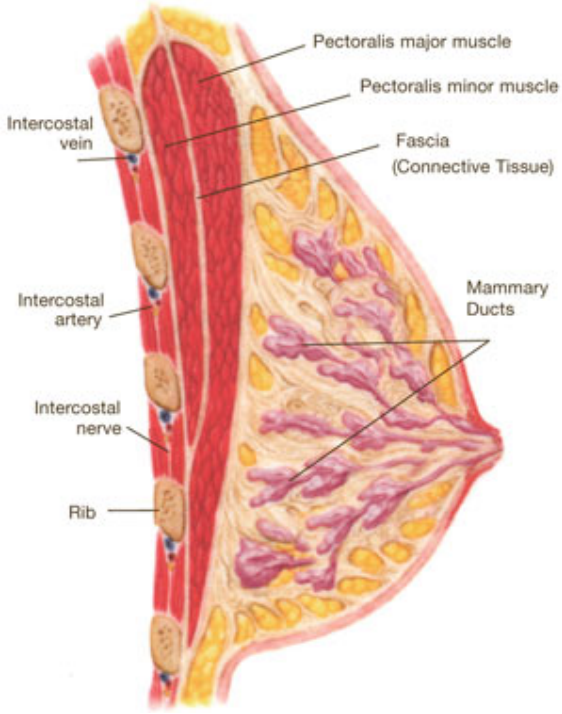
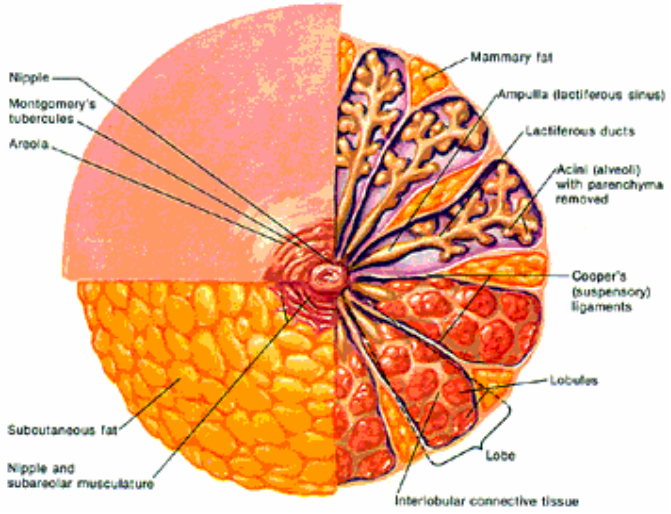


Fig .2



It contains circular (erection) and longitudinal (retraction) muscle fibres. Its base is encircled by a cutaneous discoidal area, the areola- rose pink in colour (nullipara). It becomes darker during pregnancy.

AXILLARY TAIL OF SPENCE: Prolongation of outer part of the gland at the level of 3rd rib into axilla. It is deep to deep fascia.

STRUCTURE OF BREAST: It is composed of acini which are made up of lobules which form the lobes of the gland (Fig.2). Each lobe is drained by a duct, 10 -15 ducts open onto the nipple. Each portion of ducts involved in different disease.Major duct - duct papilloma and duct ectasia, distal smaller ducts – fibroadenoma, cyst formation and sclerosing adenosis, intra lobular portion of terminal ducts – carcinoma.

LIGAMENTS OF COOPER: These are bands of connective tissue which anchors the skin on the pectoral fascia. Infiltration of this by malignant cells causes dimpling of the skin.

BLOOD SUPPLY: Breast is supplied by

1) Lateral thoracic artery from 2nd part of axillary artery.

2) 2nd, 3rd & 4th perforators of internal mammary artery.

3) Lateral branches of 2nd, 3rd & 4th intercostal arteries.

VENOUS DRAINAGE: It is to the axillary, internal mammary and intercostal veins.

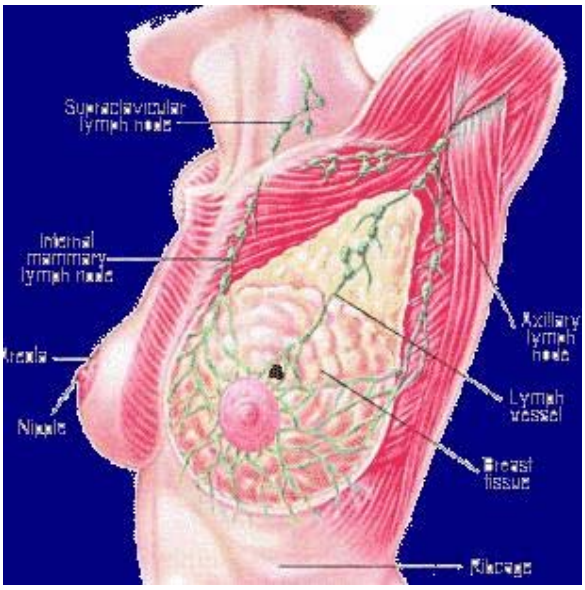
NERVE SUPPLY: Sympathetic nerves supply the secreting tissue via 2nd to 6th intercostal nerves. Skin is supplied by 4th to 6th intercostal nerves.

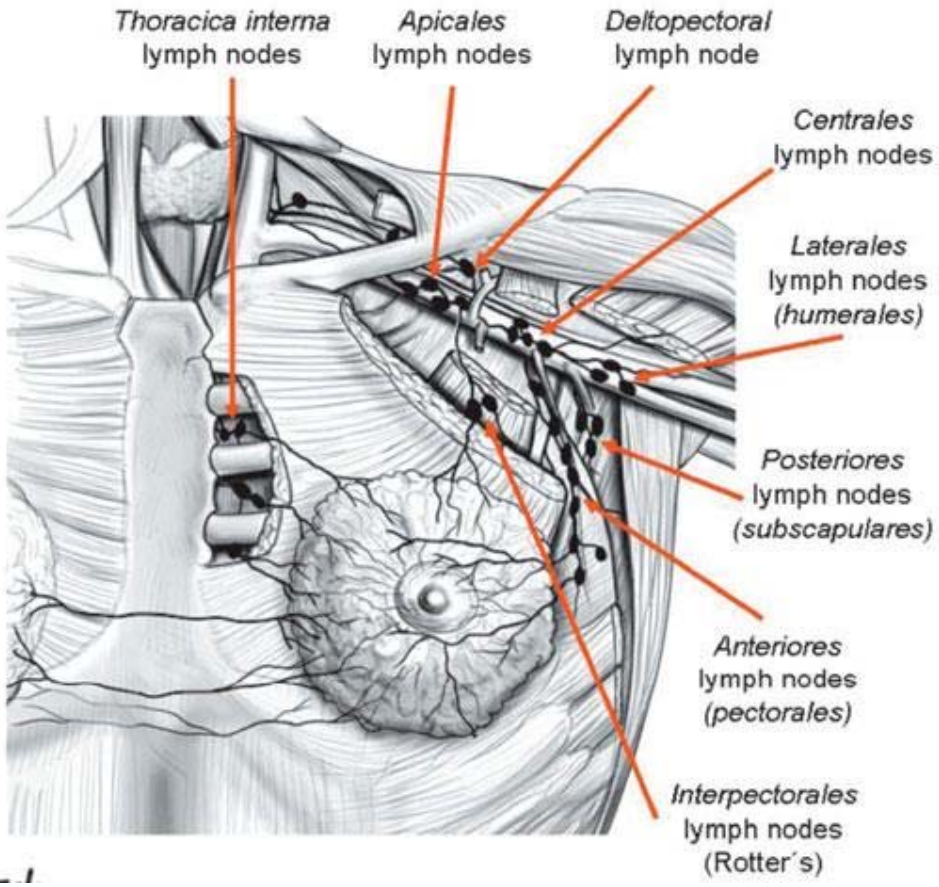
LYMPHATIC DRAINAGE (Fig.3): Skin lymphatics of breast except areola and nipple drain into axillary nodes. From the upper part it drains into to supraclavicular nodes. From the medial part it drains into internal mammary nodes.

The subareolar lymph plexus of sappey is a collection of large lymph vessels under the areola. Most of the lymphatics go to anterior group, few pass to the posterior group. From here they run to central and apical groups.

From the deeper surface, vessels pierce through pectoral muscle to the axillary and internal mammary nodes. From the medial and inferior part of breast lymph vessels drain into internal mammary nodes. At the level of first interspace, fine lymphatics connect right and left internal mammary chains behind the manubrium sterni.

LYMPHATICS OF BREAST Fig.3





SURGICAL PATHOLOGY

CARCINOMA OF THE BREAST [3, 4, 5]

NON INVASIVE (INSITU) CARCINOMA

A). Ductal carcinoma in situ (DCIS): With the advent of mammography, it now constitutes 22-80% of carcinomas. It is defined as malignant population of cells that lack the capacity to invade the basement membrane and incapable of distant metastasis. There are five subtypes - comedo carcinoma (more malignant),Solid, Cribiform,Papillary,Micropapillary.

B). Lobular carcinoma insitu (LCIS): There is proliferation of loosely cohesive cells in one or more terminal ducts / acini. It is frequently multifocal and bilateral. It is a marker for invasive carcinoma.

INVASIVE CARCINOMA

A). Invasive ductal carcinoma: It is the most Common type. It constitutes 65-80% of all mammary cancers. There may be lump breast (Fig.4), nipple discharge(Fig.5), nipple retraction, dimpling of skin or fixity to the chest wall muscles. Histologically malignant duct lining cells disposed in cords, solid cell nests, tubular glands or anastamosing masses.

B). Medullary carcinoma: Incidence 1-5% do not have striking desmoplasia. Histologically solid syncytium like sheets of large cells with lymphocytic infiltration is present.

EARLY BREAST CANCER – LUMP LT BREAST Fig .4

NIPPLE DISCHARGE Fig.5

C). Colloid or mucinous carcinoma: Occurs in old women, slow growing, histologically large lakes of amorphous mucin with scattered neoplastic cells are present.

D). Pagets disease: It involves the nipple and areola. There is invariably underlying ductal carcinoma in situ. Histological hallmark is large vacuolated cells with eccentric nuclei, involvement of epidermis by malignant cells.

E). Invasive lobular carcinoma: Peculiar feature is bilateral and multicentric. Histologically it consists of strands of infiltrating tumour cells, loosely disposed throughout the fibrous matrix.

F).Sarcomas: Usually solid tumours, there may be cystic degeneration. Examples of sarcomas are fibrosarcoma, liposarcoma & stromal sarcoma. Histologically spindle cells are seen.

G). Lymphomas: Primary lymphomas are rare. There is predominance of diffuse histiocytic lymphomas.

H). Inflammatory carcinoma: This type of carcinoma is usually mistaken for breast abscess. Clinically erythema, peau d' orange will be there. The subdermal lymphtics and vascular channels are permeated by tumour cells. Polymorphs and lymphocytes are absent near the tumour. It has fast metastatic potential.

MODES OF SPREAD [8, 9]

Breast cancer spreads by all means

1. Local spread
2. Lymphatic spread
3. Blood spread
4. Trans coelomic spread

Local spread: By local extension the tumour increases in size and invades the surrounding tissue. Thus infiltration of Cooper's ligament causes dimpling of skin. Outward growth can ulcerate and fungate. Inward growth leads to fixity to deeper structures like pectoral muscles and chestwall. **Lymphatic spread**: It occurs by two means

a. **By embolus**- in which the cancer cells are swept in lymphatic vessels to distant nodes.

b**. By permeation**- the cancer cells grow in columns inside the lymphatic lumen to the draining nodes.

Sentinel lymph node [38]: the axillary nodal status is the most powerful prognostic tool available for early breast cancer. Breast cancer spreads from the tumour bed to one or a few lymph nodes – the sentinel lymph nodes, before it spreads to other axillary nodes. These sentinel lymph nodes can be identified by lymphatic mapping techniques by using radio isotope technetium 99 sulphur colloid and a hand held gamma probe. Methylene blue also has been successful in SLNB for breast cancer.

Patients who have negative sentinel lymph nodes are safely spared of axillary dissection.

Axillary in the order of level I to level III and internal mammary nodes are affected early. The first node to get involved is the sentinel node. Supraclavicular nodes, mediastinal nodes and contralateral nodes and cotralateral breast involve very late.

Blood spread: Spread by bloodstream cause distant skeletal and visceral metastasis. Skeletal metastasis are common in lumbar vertebra, femur, thoracic vertebra and skull. Pathological fractures are common in ribs and vertebra, the secondaries are commonly osteolytic. Lung, liver and brain are also involved in metastasis in later stages. Liver metastasis occur through the lymphatics in the rectus sheath and the falciform ligament.

Transcoelomic spread: Cancer cells are shed into the coelomic cavity and settle on the ovaries to cause secondaries.

SCREENING FOR EARLY BREAST CANCER

The goal of cancer screening is early detection of malignancy at a stage that will lead to a reduction in mortality and morbidity [7, 15]. For breast cancer the ideal screening programme should be sensitive enough to detect occult cancers with a minimum of false positive findings.

Current recommendations for screening of women with breast cancer include

1. Monthly breast self examination (Fig.6).

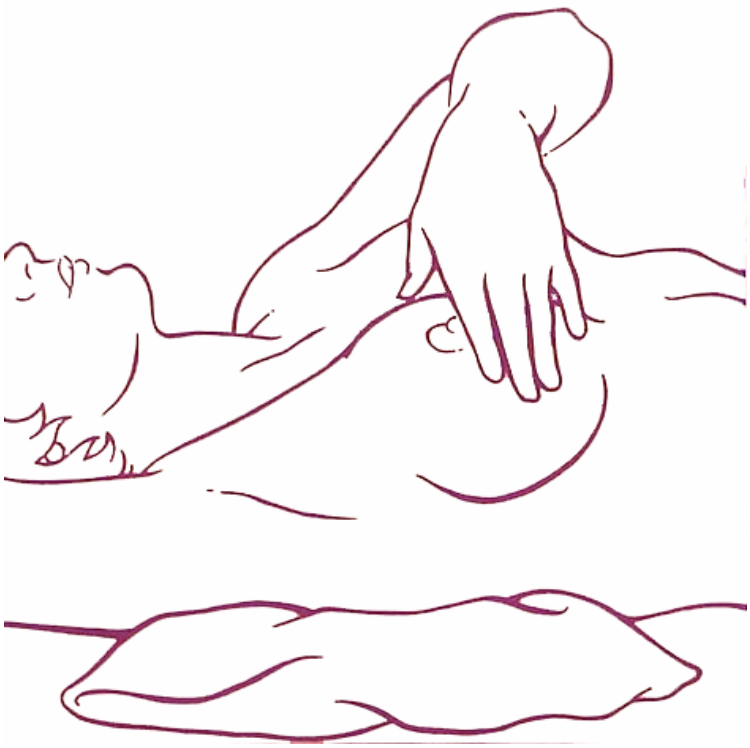
2. Clinical breast examination every 4-6 months.

3. Annual mammography for all patients above 40 yrs and for high risk patients above 35yrs[5].

Additional modalities such as ultrasonography, breast MRI, ductal lavage are currently under investigation.

Several studies suggest that MRI is more sensitive than mammography in the population.

BREAST SELF EXAMINATION Fig.6



CLINICAL BREAST EXAMINATION Fig.7

CLINICAL BREAST EXAMINATION:

Inspection: The women presenting with breast lump is examined with her arms by her side, with her arms straight up above her head, and with her hands on her hips (with and without pectoral muscle contraction).Symmetry, shape and size of the breast are recorded, as well as any evidence of oedema, nipple or skin retraction and erythema. The woman has to lean forward to accentuate any skin retraction.

Palpation (Fig.7): The breast is carefully palpated. The surgeon gently palpates the breast from the ipsilateral side making certain to examine all quadrants of the breast from the sternum to the lattismus dorsi muscle laterally and from the clavicle to the upper rectus sheath inferiorly. The surgeon performs the examination with the palmar aspect of the fingers avoiding a grasping or pricking motion. The breast may be cupped or moulded in the surgeon’s hands to check for retraction. A systemic search for lymphadenopathy is then performed by supporting the upper arm and elbow. The shoulder girdle is stabilized. Using gentle palpation all three levels of possible axillary lymphadenopathy should be assessed. Careful palpation of infraclavicular and parasternal sites is also performed.

RISK FACTORS FOR BREAST CANCER[33]

Factors important in population: Age at menarche and menopause, parity, age at first child birth, breast feeding, use of exogenous hormones, alcohol consumption.

Factors important in individual patients: Gender (female), age (steady increase with age), family history of breast cancer (mother, sisters, daughters), history of previous breast cancer (noninvasive or invasive, ipsilateral or contralateral).

Histological risk factors: Proliferative breast disease, atypical ductal hyperplasia, atypical lobular hyperplasia, carcinoma in situ.

PROGNOSTIC FACTORS

A prognostic factor is defined as any measurement taken at the time of surgery or diagnosis that is associated with outcome (overall survival, disease free survival or local control).[34, 35]

1. Tumour size.
2. Axillary nodal status.
3. Histological grade.
4. ER-PR status.
5. Age, menopausal status, vascular invasion etc.,

NOTTINGHAM'S PROGNOSTIC INDEX

NPI = (tumour size in cm x 0.2) + lymph node stage + grade of tumour.

Prognostic group	NPI	10yrs survival %
Excellent	<or=2.4	94
Good	<or=3.4	83
Moderate I	<or=4.4	70
Moderate II	<or=5.4	51
Poor	> 5.4	19

PROPHYLAXIS OF BREAST CANCER

The women who are at risk of developing breast cancer i.e. patients with strong family history of breast cancer, patients who are positive for BRCA 1 and BRCA 2 genes, patients with atypical hyperplasia, lobular carcinoma in situ and with predisposing factors for breast cancer can be given prophylactic therapy for breast cancer. These include prophylactic chemoprevention, prophylactic mastectomy and prophylactic bilateral salpingo oophorectomy. With prophylactic therapy there is a reduction in the development of breast cancer, reduction in the development of recurrence and reduction in the development of contralateral breast cancer.

Prophylactic drug therapy: Selective estrogen receptor modulators like tamoxifen can be used in the dose of 10mg twice daily[31]. Roloxifene and Fenesteride are also being used.

Prophylactic surgery: Prophylactic bilateral mastectomy is done in high risk patients [31, 39]. The risk reduction due to bilateral prophylactic mastectomy was estimated as 85% - 100% in the recent Prevention and observation of surgical end point (PROSE) study of Rebbeck and colleagues.

Prophylactic bilateral salpingo oopharectomy has also been proved to be useful in prophylaxis of breast cancer.

INVESTIGATIONS [26, 27]

Basic Investigations: Blood: Hb%, total count, differential count, ESR, Grouping and Rh typing, sugar, urea.

Urine: Albumin, sugar, deposits

Serum: Creatinine, cholesterol, liver function tests.

X-RAY Chest PA view, ECG,ultrasound abdomen and pelvis.

Investigations to Confirm the Diagnosis: Mammography, mammography guided biopsy, USG of the breast (Fig.8) and guided biopsy, MRI of the breast (Fig.9) and guided biopsy, fine needle aspiration cytology, core needle biopsy, incision biopsy, excision biopsy.

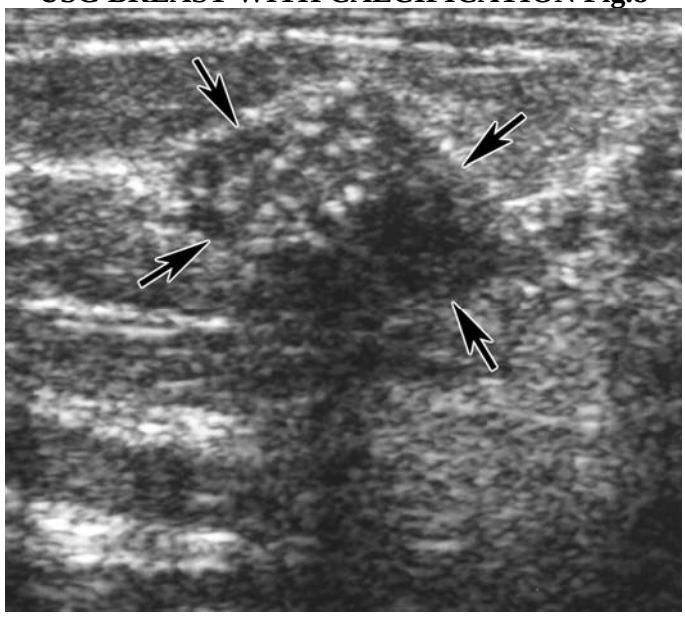
Investigations to Rule out Secondaries:

X-Ray spine and long bones, USG abdomen and pelvis, CT brain, MRI, radio isotope bone scan Tc99m, radio isotope liver scan.

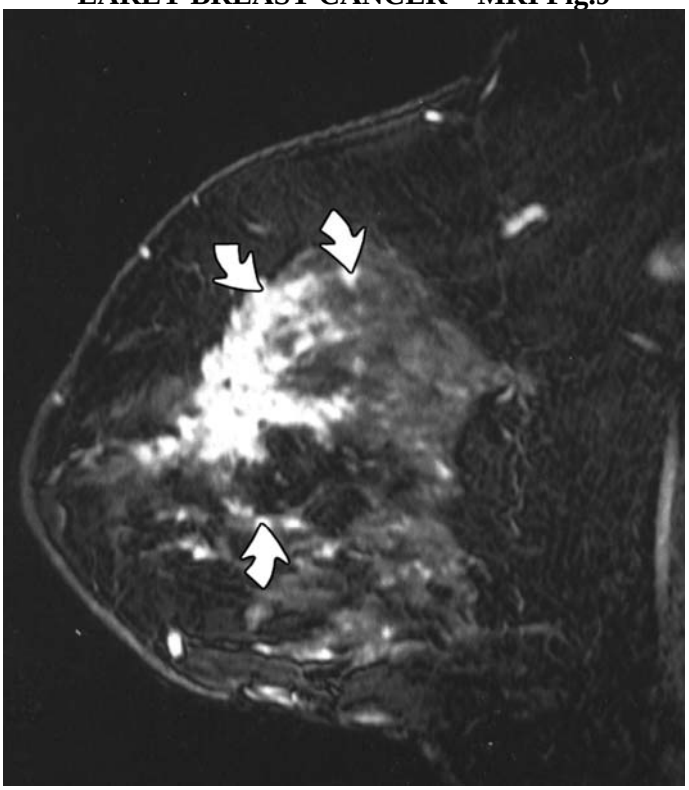
Investigations For Prognosis:

Hormone receptor assay for ER&PR status, tumour marker studies,DNA Ploidy analysis, Proto-oncogene c-erb-2 studies, cathepsin D level estimation, epidermal growth factor / receptor study.

USG BREAST WITH CALCIFICATION Fig.8



EARLY BREAST CANCER – MRI Fig.9



MAMMOGRAPHY

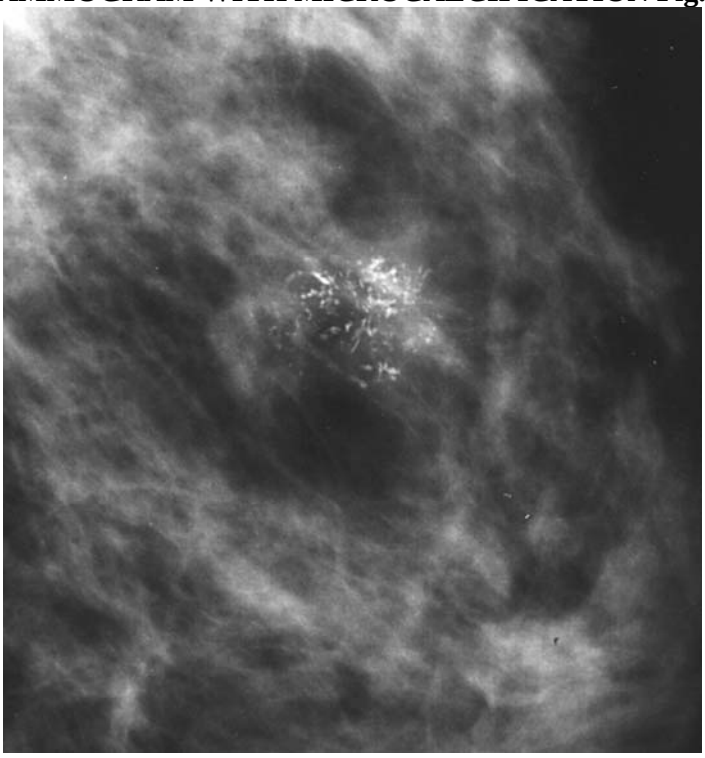
Soft tissue radiographs are taken placing the breast in direct contact with ultrasensitive film and exposing it to low voltage, high amperage X- Rays. The sensitivity of this investigation increases with age as the breast becomes less dense. Screening mammography is used to detect unexpected breast cancer in asymptomatic women[15, 16]. It supplements history and physical examination.

In mammography two views of the breast are obtained. The craniocaudal view and the mediolateral oblique view. Mammography is also used to guide interventional procedures including needle localization and needle biopsy.

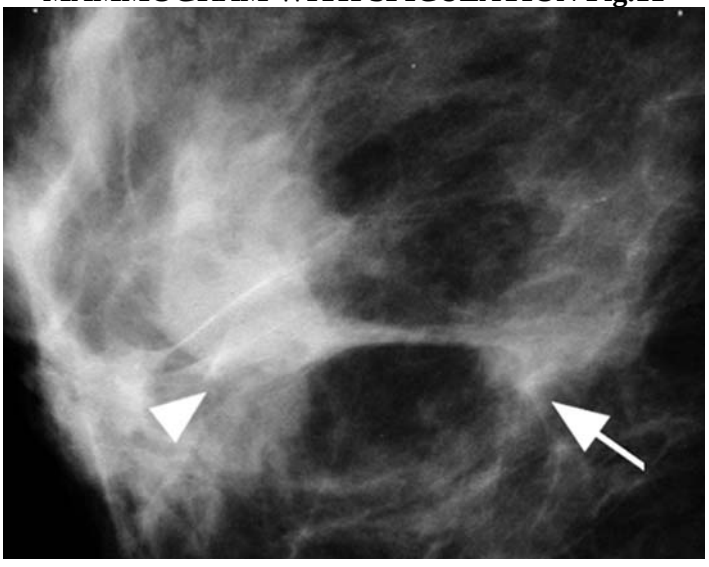
Specific mammographic features that suggest a diagnosis of breast cancer include a solid mass with or without stellate features, asymmetric thickening of breast tissues and clustered microcalcifications. The microcalcifications (Fig.10) are an especially important sign of cancer in young women- it may be the only mammographic finding.

The presence of fine stippled calcium in and around a suspicious lesionand spiculations (Fig.11) are suggestive of breast cancer.

MAMMOGRAM WITH MICROCALCIFICATION Fig.10



MAMMOGRAM WITH SPICULATION Fig.11



Mammography is more accurate than clinical examination for detection of early breast cancer providing a true positive rate of 90%.

Xeromammography techniques are identical to those of mammography with the exception that the image is recorded on a xerography plate which provides a positive rather than a negative image. Details of the entire breast and the soft tissues of the chest wall may be recorded with one exposure.

BI- RADS GRADING OF MAMMAOGRAPHIC ABNORMALITY[10]

Category	Definition
1	Negative for malignancy
2	Suggestive of benign lesion
3	Suspicious of benign lesion
4	Suspicious of malignant lesion
5	Highly suggestive of malignancy.

FINE NEEDLE ASPIRATION CYTOLOGY

Fine needles particularly 23 or 24 gauze with a 2.54-3.8 cms length along with 10 or 20 cc syringe is used for aspiration.

The aspirated material is smeared over the slides. Either the smear is air dried or a fixative containing ether alcohol mixture can be used[3, 4.]

Technique:

It is not necessary to prepare the patient for aspiration. No anaesthesia is required as the pain experienced is small and well tolerated.

The palpable lesion is fixed with one hand. Skin is cleaned and the needle is inserted into it (Fig.12). Full suction is applied. Needle tip is moved around. Piston is allowed to fall back to neutralize the pressure in the syringe and then the needle is withdrawn. Material is expressed onto the glass slide. Smears are prepared and fixed.

FNAC TECHNIUE Fig.12

TRUCUT NEEDLE BIOPSY

Disposable trucut needle or metal trucut needle can be used. **Technique:** The palpable lesion is fixed with two hands of an assistant. The skin is cleaned and local anaesthesia is infiltrated. The needle is inserted and as soon as the lump is reached the needle is advanced (Fig.13). Once the inner needle is inside the mass the outer needled is pushed and whole trucut withdrawn. The material inside the stillet is taken and sent for HPE[4, 6, 7.]

Advantages: It is quick, requires no special apparatus and technically easy.

1. In out patient department, it can be done under local anaesthesia.(care must be taken not to alter the morphology of the cells by using large volumes of LA).
2. In advanced cancers, whose excision or incision is contraindicated, trucut biopsy is ideal to confirm the diagnosis and keep permanent record of the type of cells present. As there is no damage to the skin, radiotherapy can be given at once.
3. Causes of failure:

Failure to insert the needle into the tumour especially when the tumour is small and the breast is large and fatty, Blocking of the needle with fat, Local anaesthetic, if used may dilute the specimen, Faulty location and training.For proper interpretation adequate smear is essential.

TRU-CUT BIOPSY Fig.13

HORMONE RECEPTORS

A predictive factor is any measure that predicts response or lack of response to a specific treatment. Estrogen and progesterone receptor status are the most important and helpful currently available predictive factors to assess the response to tamoxifen.[5, 15, 17]

Crucial development in the evaluation of breast cancer was the realization of the presence of hormone receptors (estrogen and progesterone) in the tumour tissue that correlates with response to hormone therapy.

Traditionally these hormone receptors were measured by dextran coated charcoal and sucrose gradient assay. Now replaced by immunohistochemical method on the grounds that it offers several important advantages

- It does not require fresh tissue.
- It can be done with minute amounts of tumour.

The two parameters evaluated in immunohistochemical preparations of hormone receptors are

1. The number of tumour cell nuclei stained - expressed as a percentage of entire tumour cell nuclei population.
2. The intensity of the reaction - is graded as negative, weak, moderate and strong. The two parameters are sometimes combined into a scoring system.

. Hormone receptors can also be evaluated in paraffin embedded breast tissue by insitu hybridization technique and by polymerase chain reaction. No statistically significant difference has been found between ductal type and lobular type tumours. However most medullary carcinomas, intraductal carcinoma of comedocarcinoma type are negative for receptors whereas mucinous carcinoma has the highest rates of positivity.

Generally estrogen receptor concentrations are lower in tumours of premenopausal women than those of postmenopausal women Fisher et al found the presence of estrogen receptor to be significantly associated with high nuclear and low histologic grades, absence of tumour necrosis, presence of marked tumour elastosis and in patients of older age group.

HER 2/ neu: HER 2/ neu is an oncogene that encodes a transmembrane glycoprotein with tyrosine kinase activity known as P 185 which belongs to the family of epidermal growth factor receptors. Its overexpression measured by immunohistory. Overall expression of HER 2/neu is avery good predictor of response to Herceptin but not to overall survival.

STAGING OF BREAST CANCER

Method of staging: Performed initially on a clinical basis according to physical examination, laboratory and radiological evaluation [5, 9].

1. Comprehensive history and physical examination.
2. Bilateral breast imaging (mammography / xeromammography).
3. Laboratory evaluation including haemogram and hepatic function.
4. X- ray chest PA and LATERAL views.

5. Skeletal X- ray survey (indicated if there is bony pain).

6. USG abdomen for all cases, abdominal CT and radionuclide bone scan if necessary.

TNM CLASSIFICATION:

Primary tumour (T)

TX –Primary tumour cannot be assessed.

TO- No evidence of primary tumour.

Tis – Carcinoma in situ (intraductal carcinoma, lobular carcinoma in situ, pagets disease of nipple with no tumour).

T1 – Tumour < or = 2cms in greatest dimension.

T1(a) - < or =0.5 cm in greatest dimension.

T1(b) ->0.5 cm but < 1 cm in greatest dimension.

T1(c) ->1cm, but not > 2cm in greatest dimension.

T2 – Tumour> 2cm, but not > 5cm in greatest Dimension.

T3 – Tumour >5cm in greatest dimension.

T4 – Tumour of any size with direct extension to chest wall or skin.

T4(a) – extension to chest wall.

T4(b) – Edema (including peau d' orange) or Ulceration of the skin of breast or satellite Skin nodules confined to same breast.

T4(c) – Both T4 (a) & T4(b).

T4(d) – Inflammatory carcinoma.

Nodal staging:

NX –Regional lymph nodes cannot be assessed

(e.g., previously removed or not removed for pathologic study).

NO – No regional lymph node metastasis.

N1 – Metastasis to movable ipsilateral axillary lymph node(s).

N1(a) –Only micrometastasis (none larger than 0.2cm).

N1(bi) – Metastasis in 1-3 lymph nodes, >0.2cm and < 2cm in greatest dimension

N1(bii) – Metastasis to 4 or more lymph nodes,>0.2cm and >2cm in greatest dimension.

N1(biii) – Extension of tumour beyond the capsule of a lymph node metastasis <2cm in greatest dimension.

N1(biv) – Metastasis to lymph node 2cm or more in greatest dimension.

N2 – Ipsilateral fixed nodes. (or) Internal mammary nodes.

N3 – Ipsilateral supraclavicular Lymph nodes.

Distant metastasis:

MX – Presence of distant metastasis cannot be assessed.

MO –No distant metastasis.

M1 – Distant metastasis present.

AMERICAN JOINT COMMITTEE ON CANCER

STAGE GROUPING [11]

Stage 0	Tis N0 M0
Stage I	T1 N0 M0
Stage II A	T0 N1 M0, T1 N1 M0, T2 N0 M0
Stage II B	T2 N1 M0, T3 N0 M0
Stage III A	TO N2 M0, T1 N2 M0, T2 N2 M0, T3 N1 M0, T3N2M0
Stage III B	T4 any N M0, Any T N3 M0
Stage IV	Any T Any N M.

MANCHESTER STAGING [13]

Stage I - Growth confined to breast, skin involvement less than tumour size.

Stage II - Growth confined to the breast, skin involvement less than tumour size, palpable mobile ipsilateral lymph node in axilla.

Stage III - Growth extending beyond mammary parenchyma.

a. Skin involvement more than the tumour size with mobile ipsilateral axillary nodes.

b. Tumour fixed to underlying muscle or fascia with Mobile ipsilateral axillary nodes.

Stage IV – Growth beyond breast area shown by complete fixation of tumour to chest wall, fixed ipsilateral axillary lymph nodes, deposits. supraclavicular nodes or in opposite breast, satellite nodules or distant metastasis.

TREATMENT OF STAGE I & II (EARLY)

BREAST CANCER

These patients are divided into 3 risk groups. Treatment depends upon which group they come under [5, 13, 16]

Low risk group: Tumour less than 1 cm in size, well differentiated tumour, and ER + ve tumours – local surgery and followup alone.

Intermediate risk group: Tumour size 1-2 cms , well differentiated tumours and ER+ ve irrespective of menopausal age – local surgery + hormonal therapy.

High risk group: Tumour more than 2cms in size or 1-2 cms in size but ER –ve and poorly differentiated tumours – local surgery + systemic chemotherapy.

SURGICAL MODALITIES FOR EARLY BREAST CANCER

Breast Conservation Surgery[18, 20] (Fig14):

Lumpectomy: It involves removal of clinically palpable tumour mass. But microscopical clearance of surgical margins is not possible.

BREAST CONSERVATION WITH AXILLARY CLEARANCE
Fig.14

Wide excision: It is otherwise called segmentectomy, partial mastectomy or tylectomy. It involves removal of tumour proper and a rim of clinically normal breast tissue.

Quadrantectomy: Removal of 2 – 3 cms of adjacent breast tissue and skin over the tumour of the affected quadrant of the breast.

Quadrantectomy+ axillary clearance+ radiotherapy – QUART therapy.

MASTECTOMY[13, 18]:

Simple mastectomy: It means complete removal of the breast and axillary tail leaving the axilla undisturbed. But few anterior axillary group of nodes attached to the axillary tail is also removed.

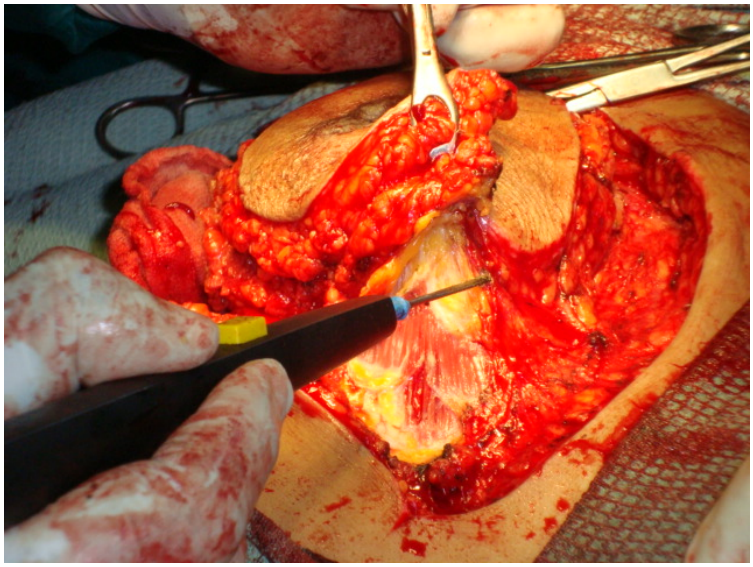
Modified radical mastectomy (Auchincloss's) (Fig15-18): In this procedure the pectoralis minor is not removed or divided, because only 2% of the patients are benefited by dissection of level III nodes.

Modified radical mastectomy (Patey's): In this method simple mastectomy is done with axillary clearance. Pectoralis minor is removed to reach the upper 2/3rd of the axilla. The pectoralis major muscle is preserved to improve the function and appearance.

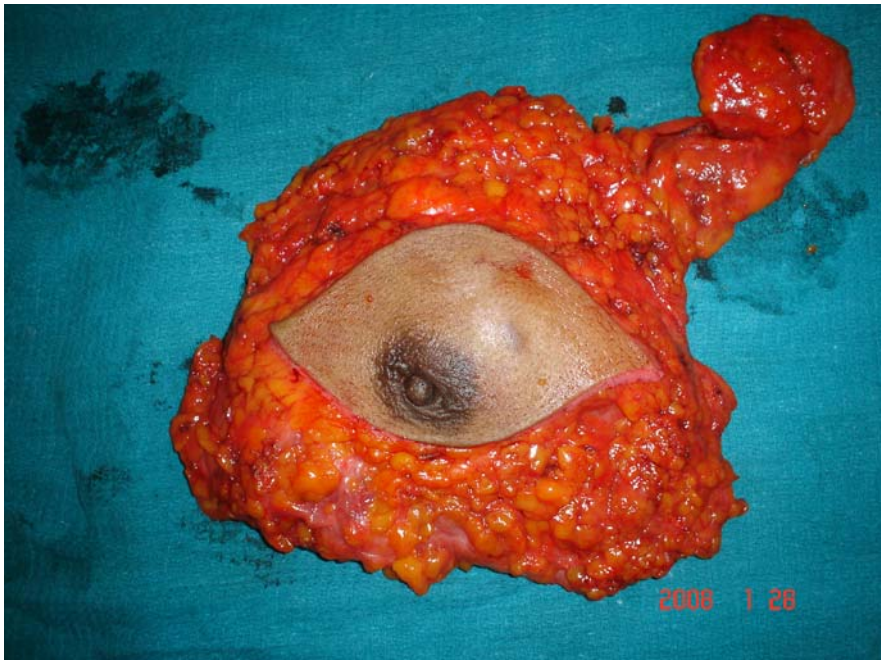
Modified radical mastectomy (Scanlon's): Here the pectoralis minor muscle is just divided but not removed. This permits easy removal of level III nodes, and the lateral pectoral nerve to pectoralis major is also preserved.

OBLIQUE MRM INCISION Fig.15

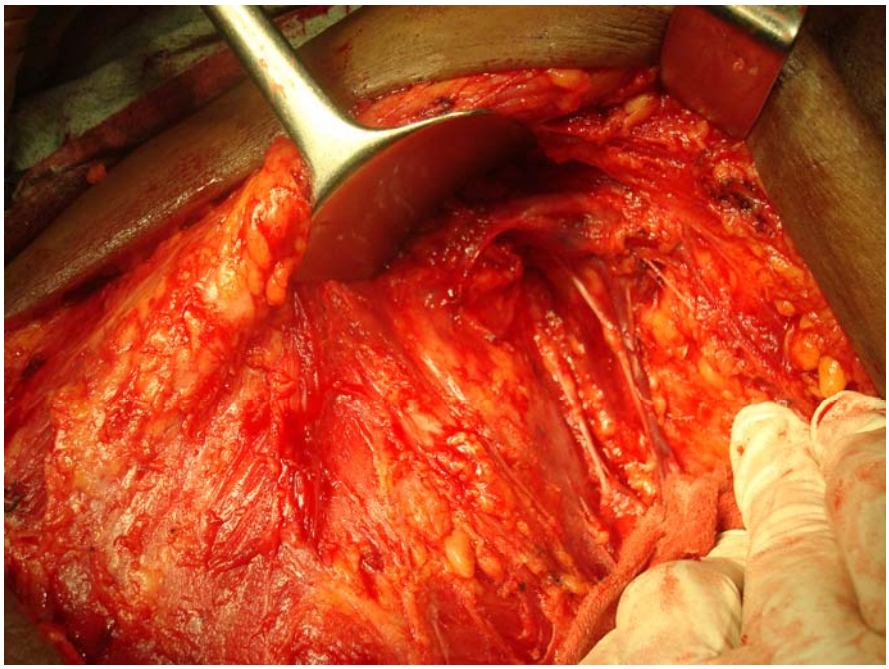
REMOVAL OF BREAST TISSUE WITH PECTORAL FASCIA Fig.16



LT MRM SPECIMEN Fig.17



LT AXILLARY DISSECTION Fig.18



Breast reconstruction: Breast reconstruction after mastectomy has become an important part of comprehensive treatment for patients who have breast cancer[40]. It can also improve the psychosocial wellbeing and quality of life of patients who have breast cancer. This process can start at the time of the mastectomy (immediate reconstruction) or any time afterwards (delayed reconstruction).

Transverse rectus myocutaneous TRAM flap (Fig.19**)** or lattismus dorsi myocutaneous LD flap can be used for breast reconstruction.Finally nipple and areola can be reconstructed.

RT MRM WITH TRAM FLAP RECONSTRUCTION Fig.19

CHEMOTHERAPY

The various clinical trials of National surgical adjuvant breast project demonstrated that surgery followed by adjuvant chemotherapy yielded superior results to either modality alone[19, 24]. Despite improvements in loco-regional control the predominant pattern of failure in breast cancer is distant metastasis. The probability of distant dissemination is strongly associated with the rate of axillary node involvement (micrometastatic disease).

Empirical and practical considerations were used in the selection of chemotherapeutic agents, the treatment schedule and the duration of treatment. The selection of drugs and the treatment schedule (typically given in cycles) must achieve a net reduction in the cell burden by the time to deliver the next cycle, and the optimal treatment intensity must be at least as intense as that which yields the optimal results.

The use of combination of drugs is superior to the use of single agent and can eradicate 10-100 times as many cells. In transplantable tumours, surgical adjuvant chemotherapy increases the long term cure rates. The efficacy of chemotherapy is dose dependant related to the tumour cell burden at the time of drug treatment and to the presence of primary resistant tumour cells.

Operable breast cancer is often a systemic disease and variations in loco-regional therapy are unlikely to substantially affect survival. Only by control of distant metastasis can there be an improvement in the outcome of breast cancer patients.

A number of new drugs have been tried especially towards treatment of metastatic cancer of the breast. Taxol a microtubule agent (paclitaxel and docetaxel) in combination with doxorubicin have been found to be very effective in the treatment of advanced breast cancer.

Non-specific immunotherapy in the form of levamizole and BCG has been tried in the past in the management of advanced breast cancer, now been found to be largely ineffective.

CHEMOTHERAPY REGIMENS FOR BREAST CANCER[24]

Drug	Regimens			
	Classic CMF	CMF	AC	FAC
Cyclophosphamide	100 oral days 1- 14	600 IV day 1	600 IV day 1	400-500IV day 1
Methotrexate	40 IV days 1&8	40 IV day1		
5-Fluorouracil	600 IV days1&8	600 IV day1		400-500 IV days1&8
Adriamycin			60IV day1	40-50IV day1
Cycle freqency	Once in 4wks	Once in 3wks	Once in 3wks	Once in 4wks

Drug doses in mg/sq. mt body surface area

Surface area in Sq.metre = 0.007184 * wt. in kg 0.425/ Ht in cm 0.725

RADIOTHERAPY

Combination of RT and surgery:

Modes of failure of two are different. RT is highly effective at the periphery of the tumour where the cell number is less. RT failure occurs at the centre where a large number of cells are in hypoxic state.

Surgical failure is usually due to remnant tumour cell at the periphery being left in the body by inadequate resection or limitation of resection by adjacent vital organs. So combination of RT and surgery helps in overcoming this problem.[16, 22]

Preoperative RT: The tumour margins are sterilized. But the destruction of cells by RTwill prevent the correct assessment of initial extent of tumour , intra operative staging is impaired.

Postoperative RT: Patients who are going to benefit from RT can be determined. Unnecessary exposure is avoided.

BREAST CANCER AND RT:

Megavoltage electron beam or co 60 used for dose homogenicity and skin sparing. Breast is irradiated by tangentially directed fields. Total dose of 4500 to 5000 rads given fractioned to 180 to 200 rads 5 days a week for 5 to 5 ½ weeks.

Booster doses may be given at the conclusion of RT in which the total dose is increased to 6000 rads.

Axillary dissection is a contraindication to RT to axilla due increased complications and the fact that less than 1% of patients who had undergone axillary dissection have treatment failure due to local recurrence in axilla. Microscopic extranodular extension is of no significance. Undissected axilla indicated cases will receive 40-50 rads, ie., clinically positive nodes morethan 4 in number.

INDICATIONS: Definite: Positive margins of mastectomy specimen or gross residual disease, T3 tumour especially if N+, Any T4 tumour, gross extracapsular lymphnode disease.

Relative: Surgical margin of 1-2 mm only, 4 or more nodes especially postmenopausal.

RT In stage I & II breast cancer: Breast conservation surgery - After lumpectomy RT is given for the remaining breast tissue.

Adjuvant RT: Chest wall recurrence is seen in 5%-10% of node negative and 15%-20% of node positive patients. Adjuvant RT is highly effective in reducing the local recurrence to less than 5% Survival is definitely improved in node positive & medial quadrant tumours receiving adjuvant RT.

HORMONE THERAPY

Response rates of breast cancer to hormonal treatment with respect to activities of ER & PR [24, 29, 30]

RECEPTOR STATUS		RESPONSE (%)
ER+	PR+	78
ER+	PR+	34
ER-	PR-	10
ER-	PR+	45

ER = Oestrogen receptor

PR = Progesterone receptor

Patients with invasive breast cancer whose tumours are totally lacking in estrogen and progesterone receptors donot respond to or derive benefit from hormonal manipulations. The benefits of tamoxifen in DCIS have been shown to be restricted to patients with hormone receptor positive tumours.

Studies from the early breast cancer triallists collaborative group (EBCTCG) overview analysis suggest that even patients whose tumours have as few as 1% of cells staining positively for hormone receptors may derive benefit from adjuvant endocrine therapy. For these reasons it is most appropriate to have ER and PR expression reported as percentage of cells stained for each receptor.

At 5 yrs after diagnosis women with ERand PR positive tumours have a relapse rate of 5%-10% superior to that of patients with ER negative tumours, but this advantage decreases and ultimately disappears with increasing time of follow up.

Tamoxifen therapy significantly decreased the risk of dying of breast cancer among patients with ER positive tumours compared to those with ER negative and PR negative tumours.

Discovery of tamoxifen , a non steroidal selective oestrogen receptor modulator which has low toxic effect, is the first line of treatment for patients with hormone responsive breast cancer. It competes with circulating oestrogens for binding to oestrogen receptor protein. This blockage accounts for atleast some of it's antiproliferative activities. The standard dose of tamoxifen is 20mg/day. It has a half life of 7 days and takes four weeks to reach a steady state in the plasma. There is no evidence that prolonging treatment beyond 5 yrs may produce any benefit. Since introduction in 1970 tamoxifen has replaced previously prescribed drugs like oestrogens and androgens. Though generally well tolerated side effects like menopausal signs and symptoms, nausea, thrombophlebitis, ocular abnormalities and endometrial carcinoma have been reported.

Leutinising hormone releasing hormone analogues like leuperolide, goserelin, buserelin are promising new drugs in the hormonal treatment

of breast cancer. These agonist drugs decrease follicle stimulating hormone and prolactin secretion as well as circulating levels of sex hormones resulting in medical equivalent of oophorectomy.

Progestational agents like medroxy progesterone acetate and megestral acetate are widely used. The mechanism of action though not clear, these drugs are used in metastatic disease as some patients show response to these drugs, as a second line hormonal therapy with tamoxifen[32]. It is now well understood that in postmenopausal women oestrogen are largely produced by aromatization of adrenal androgens and that aromatase inhibitors (anastrazole, letrazole) can exert an anti-tumour effect in breast cancer.

Aminoglutethemide has shown to inhibit several types of adrenal steroid synthesis and the aromatase mediated peripheral conversion of adrenal androgen to oestrogen. However the side effects have been considerable. Currently the standard approach is 250mg of aminoglutethamide twice daily.

FOLLOW UP

With improving outcomes in breast cancer treatment there is a growing population of breast cancer survivors who are living to older ages. Most recurrences or metastasis are diagnosed on the basis of symptoms and physical findings[5, 6]. Biochemical testing and imaging are not of much importance. Patients are educated about symptoms and signs of recurrences (Fig.20) at the completion of therapy.

1.Monthly breast self examination both breasts in patients who underwenbreast conservation surgery and contralateral breast in patients who underwent modified radical mastectomy.

2.Clinical breast examination every 3-6 months for the first 3 years, every 6-12 months for the next 2 years and then annually for the lifetime.

3.Mammography of the ipsilateral breast (remaining after lumpectomy)-once in 6 months, contralateral breast annually.

4.Imaging of chest and abdomen annually for 3 years.

CT brain and radionuclide bone scan are not routinely done during follow up of breast cancer patients. Patients should continue their routine health maintenance evaluation. They should report if there is any new symptoms such as new lump, pain, dyspnoea, weight loss, etc

RT MRM SCAR Fig.20

Materials and Methods

MATERIALS AND METHODS

This was a prospective study which consisted of patients admitted to all surgical units of COIMBATORE MEDICAL COLLEGE HOSPITAL, COIMBATORE with early breast cancer from august 2006 – September 2008.

A complete clinical evaluation of the case including history, general physical examination and clinical breast examination was done.

Necessary investigations were done to confirm the diagnosis, stage the disease and for definitive treatment. Fine needle aspiration cytology was done for all cases to confirm the diagnosis. Routine blood investigations, chest x-ray and ECG were done for all cases. Bilateral mammogram, liver function tests and ultrasound abdomen was done to stage the disease.

For loco regional control modified radical mastectomy with or without oophorectomy was done. Adjuvant therapy in the form of Chemotherapy, hormone therapy or radiotherapy was given depending upon the lymph nodal status and receptor status. Periodical follow up of all cases were done to assess the local and systemic metastasis.

Results and Discussion

RESULTS AND DISCUSSION

During the period of study from august 2006 – September 2008 a total number of 186 breast cancer cases attended our institution. Out of this, 33 patients 17.7% of cases presented with early breast cancer. This study was consistent with that of FisherB, Je ong JH, Dignam J, et al. early breast cancer 15- 20%.[16]

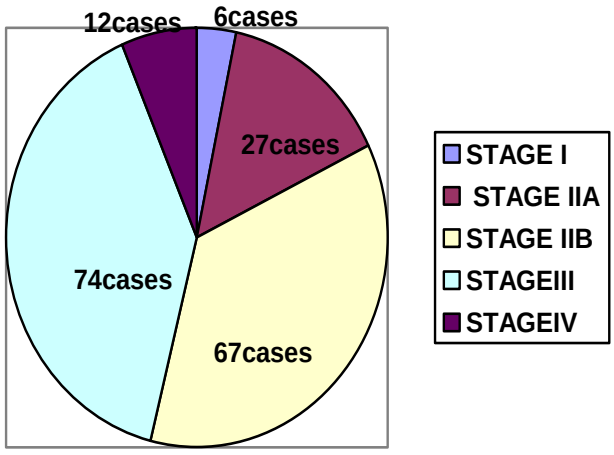
STAGE WISE INCIDENCE OF BREAST CANCER

Total number of early breast cancer cases - 33 cases

Number of cases in stage 1 - 6 cases

Number of cases in stage 2 a - 27 cases

Total number of locally advanced cases - 153 cases.



The other patients who presented in late stages 153 cases, were mostly unaware of the disease or they were taking native treatment until late stages.

This shows a great need for health education programme and social awareness regarding breast cancer among the public.

AGE INCIDENCE

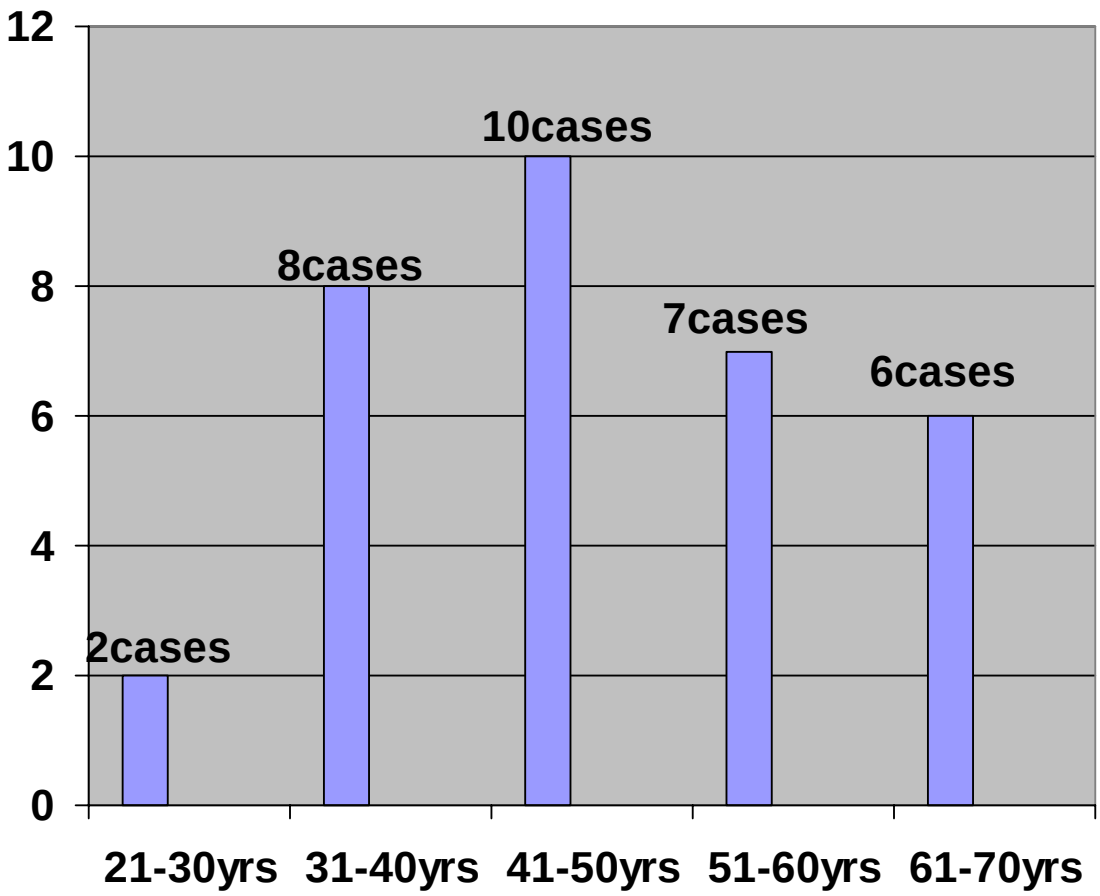
AGE	NO. OF CASES
21 – 30 YRS	2
31 – 40 YRS	8
41 – 50 YRS	10
51 – 60 YRS	7
61 – 70 YRS	6

There were no cases recorded below 28 years of age.

There was an increased incidence of breast cancer between the ages of 40- 50 years of age - 23 cases.

Most of the cases were between 41 – 50 years. The number of young women detected with breast cancer is increasing. (Early breast cancer triallist's collaborative group, Lancet 1998)[17] The reasons may be changes in life style, late child birth and beginning of lactation. There fore early diagnosis is mandatory. This indicates screening of population for detection of breast cancer in early stages with mammography is necessary after the age of 40yrs.

AGE INCIDENCE IN EARLY BREAST CANCER



AGE AT MENARCHE

10 - 12 years - 7 cases

12 -15 years - 18 cases

16- 18 years - 8 cases

AGE AT MARRIAGE

The average age at marriage was 20 years. All patients were married.

AGE AT FIRST CHILD BIRTH

Less than 25 years - 26 cases

More than 25 years - 6 cases

PARITY

Patients with 2 or more children - 29 cases

Patients with single child - 3 cases

Nullipara - 1 case

DURATION OF BREAST FEEDING

Most of them have breast fed their children for about 1 – 1 1/2 years.

Duration of breast feeding	No. of cases
Less than 6 months	6 cases
6 months to 1 yr	8 cases
1 yr to 11/2 yrs	18 cases

There were no cases with family history of breast cancer.

Late menarche, early child birth, multiparity and period of breast feeding even though most of them have breast fed for more than 1 yr did not protect our patients.

MENOPAUSAL STATUS

Number of premenopausal women - 18 cases

Number of postmenopausal women - 15 cases

CLINICAL PRESENTATION

The most common form of clinical presentation was mass in the breast.

SYMPTOMS	NO. OF CASES
Lump breast	33
Mastalgia	6
Nipple discharge	2
Preexisting breast lesions	2

The commonest site was upper and outer quadrant in 23 cases.

SIDE WISE INCIDENCE

SIDE	NO. OF CASES
Left breast	18 cases
Right breast	15 cases

All patients had lump breast, 6 patients presented with mastalgia and 2 cases had nipple discharge. Two patients had pre existing breast lesions

– fibrocystic disease for which they were taking treatment. The commonest site of lump being the upper and outer quadrant in 23 cases and the side was left in 18 cases.

INVESTIGATIONS DONE:

Basic investigations were done for all cases including mammogram of the opposite breast and USG abdomen.

FNAC - 33cases (was inconclusive in 2 cases)

Tru-cut biopsy - 2 cases out of which one was inconclusive

Excision biopsy - It was confirmatory for a case of lobular carcinoma.

All 33 cases underwent FNAC to confirm the diagnosis, out of which 31 cases – 93.9% were positive for breast cancer, the other 2 were inconclusive. The patients who had vague nodularity in the breast and inconclusive report of FNAC (2 cases) were diagnosed to have carcinoma when they were subjected to mammography. Out of the 2 inconclusive cases 1 case was confirmed by trucut biopsy and the other with excision biopsy (lobular carcinoma).

TREATMENT MODALITIES

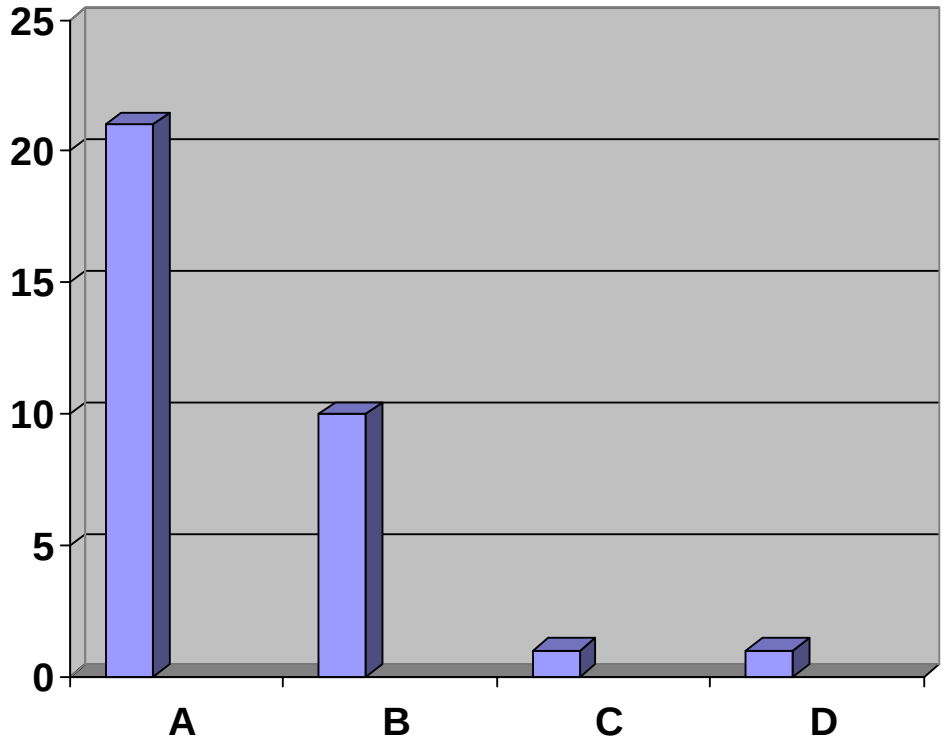
TYPE OF SURGERY DONE	NO. OF CASES
Modified radical mastectomy (Auchincloss's)	21
MRM with B/L oophorectomy	10
Breast conservative surgery with axillary clearance	1
MRM with TRAM flap	1

Breast conservation surgery with radiotherapy being the treatment of choice for early breast cancer was advised for all patients. They were also told about the necessity for regular follow up after breast conservative surgery. Most of the patients were from poor socioeconomic group and from far away places. So they were not willing for breast conservation surgery.

Out of 33 cases 32 patients underwent modified radical mastectomy and one case was treated with breast conservation surgery with axillary clearance followed by radiotherapy, because both MRM and breast conservative surgery with radiotherapy have equal results in terms of local recurrence (Vicini, F. A., Recht, A.,Abner A, et al)[22]. One patient in stage IIa who requested for breast reconstruction was offered MRM

withTRAM flap reconstruction. Axillary clearance was done for all cases and sentinel lymph node sampling was not done in our study.

TYPE OF SURGERIES DONE FOR EARLY BREAST CANCER



A- MRM -21Cases.

B- MRM with B/L Oophorectomy - 10 Cases.

C- BCS with Axillary clearance - 1Case

D- MRM with TRAM Flap – 1Case

The premenopausal patients were randomly selected for oophorectomy. It was not depending on the receptor status as we did the receptor analysis only in the post operative specimens. Of 10 cases who were subjected for oophorectomy 4 were positive for ER& PR receptors.

ADJUVANT THERAPY

Number of cases received chemotherapy - 27 - 81%

Number of cases received hormone therapy - 12 - 36%

Number of cases received radiotherapy - 1 - 3%

27 cases were treated with chemotherapy. The standard regimen used was AC regimen - Adriamycin 60 mg i.v and cyclophosphamide 600 mg i.v given for single day. All patients were given 6 cycles, at an interval of 3 weeks.(J Natl. Cancer inst Mongr)[18.] Invariably all patients developed alopecia, 2 cases had mucositis and they were treated conservatively, and 1 case had anemia which was treated with two units of blood transfusion. All the patients completed their chemotherapy in due dates and there was no left outs

Hormone therapy was given for 12 cases, who had positive receptor status. Tamoxifen in the dose of 10 mg was given twice daily.

Post operative radiotherapy was given to the patient who was treated with breast conservative surgery.

RECEPTOR STATUS

Number of cases with ER&PR receptor positive - 13

Number of cases with ER&PR receptor negative - 20

Premenopausal women with receptor positivity - 5 (27.7%)

Postmenopausal women with receptor positivity - 8 (53.3%)

Receptor study was done for all cases. Estrogen and progesterone receptors were positive in 13 cases, accounting for a total of 39%. Receptor positivity rate was more in post menopausal women – 53.3% when compared to pre menopausal women – 27.7 %. This indicates a better prognosis in post menopausal women and good response to tamoxifen therapy when compared to premenopausal women[29].

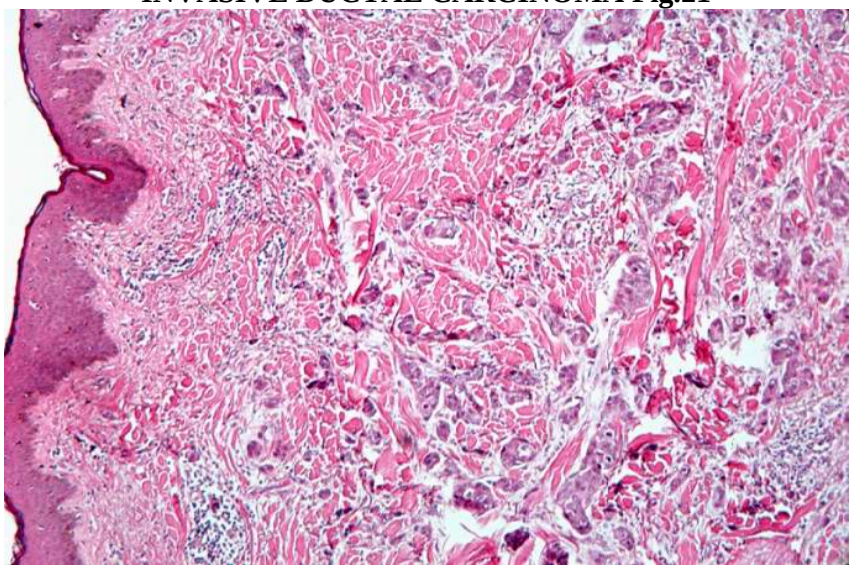
HISTOPATHOLOGICAL TYPES

HPE TYPES	NO. OF CASES
Invasive ductal carcinoma(Fig.21)	29
Invasive lobular carcinoma(Fig.22)	1
Atrophic scirrhous carcinoma	1
Medullary carcinoma	1
Colloid carcinoma	1

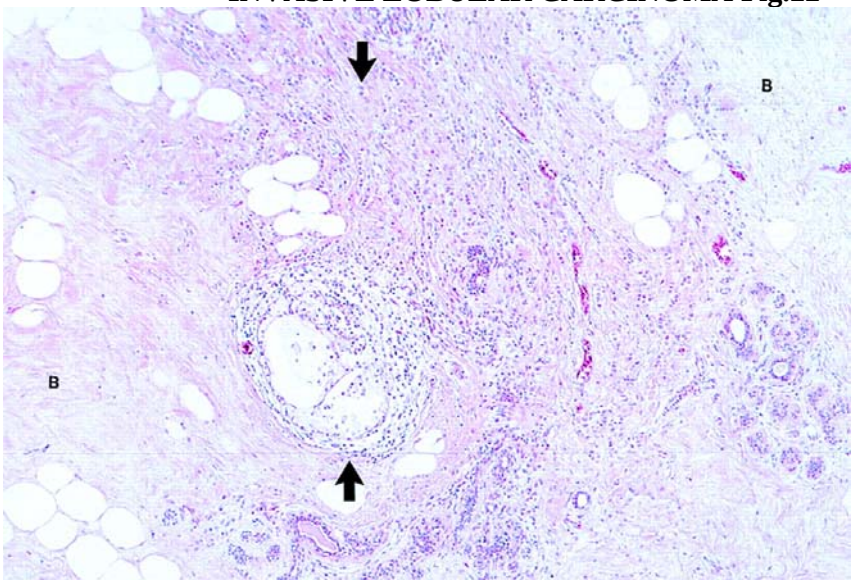
The commonest histopathological type encountered in this study was invasive ductal carcinoma in 29 cases.

HPE of axillary lymph nodes showed micrometastasis in 2 cases there was no cases with gross tumour invasion of nodes and there was no extracapsular invasion. Reactive hyperplasia was noted in 5 cases.

INVASIVE DUCTAL CARCINOMA Fig.21



INVASIVE LOBULAR CARCINOMA Fig.22



FOLLOW UP

PERIOD OF FOLLOW UP	NO. OF CASES
More than 2 yrs	8
1 ½ - 2 yrs	10
1 – 1 ½ yrs	7
6 months – 1 yr	6
Less than 6 months	2

All patients were regularly followed up. As the cases were detected and treated in early stages there was no loco regional recurrence or distant metastasis[5, 7]. So detection of breast cancer in early stages by triple assessment - breast self examination, clinical breast examination and screening mammography is necessary.

Conclusion

CONCLUSION

1. The highest incidence of early breast cancer was between 41– 50 years. This indicates the necessity for screening the population with mammography for detection of breast cancer in early stages after the age of 40 years.
2. 93.9% of cases were diagnosed by FNAC. The commonest HPE type in early breast cancer was invasive ductal carcinoma.
3. ER and PR positivity rates were more in post menopausal women 53.3%.when compared to pre menopausal women 27.7% indicating better prognosis in post menopausal women.

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Annexures

PROFORMA
COIMBATORE MEDICAL COLLEGE HOSPITAL

A study of the management of early Breast Cancer

Name: Age: Sex: IP.No:

Address:

DOA: DOS: DOD:

Occupation: Marital Status:

Educational Status: Socio Economic Status:

I. Clinically History 1. Presenting Symptoms

When was the swelling noted:

How did it appear: Acute / Insidious

Progress: Increase in Size/ Decrease in Size/ No change

Any other swelling noticed: a.Same breast / Opposite breast

b. Ipsilateral LN / Contralateral LN

Associated Symptoms: Pain, nipple discharge, nipple retraction, loss of weight

Symptoms suggestive of metastasis: Back Pain, Spontaneous Fracture, Headache /

convulsions, Chest Symptoms, Jaundice, Opposite Breast Swelling

Inflammatory symptoms: a. Systemic : Pyrexia, Sweating, Malaise, Anorexia

b. Local : Pain, Change in colour, Edema, Cellulitis.

2. Past History

H/o. associated medical conditions like HT / DM / HD / TB, similar swelling in

the breast, surgery for benign breast disease.

3. Family History

H/o. breast cancer in I degree relatives

4. Drug History

H/o. OCP intake / HRT, H/o previous exposure to radiation

5. Menstrual History

Age at menarche, age at menopause, alteration in cycles

6. Obstetric History

Parity : Age of patient at l child birth:

History and duration of breast feeding :

7. Material History

Age of the patient at marriage: No of partners:

8. Personal History

History of any addiction - Smoking / alcohol

Dietetic history:

II. Examination

General Examination : Built / Pallor / lcterus / Pedal edema

/lymphadenopathy.

Breast: A. Inspection

B. Palpation

C. Arm and chest wall

D. Lymph nodes

E. Opposite breast /Opposite axilla

Other Systems Abdomen: (i) Organomegaly, (ii) Mass, (iii) PV / PR

Respiratory system :

Cardiovascular system :

Central nervous system :

Spine and cranium :

Staging: A. TNM B. Stage

Biopsy: FNAC Histopathology

Other investigations

a. Radiology – Mammogram, X- ray chest, USG abdomen and pelvis, CT / MRI

b. Hematologic parameters

c. Receptor study

d. Bone scan

Treatment plan:

Treatment Done:

a. Surgery

b. Radiotherapy

c. Chemotherapy

d. Hormone therapy

e. Others

Follow up:

MASTER CHART

S.NO	NAME	AGE	I.P NO	MENOPAUSAL STATUS	STAGE	RECEPTOR STATUS	TREATMENT	HPE TYPE	FOLLOW UP
1	Ayakkal	40	39350	Pre menopausal	II a	ER & PR Negative	Rt. MRM + CT	Invasive ductal ca	No recurrence or metastasis
2	Suguna	30	51258	Pre menopausal	II a	ER& PR positive	Lt. MRM+ Oophorectomy+CT	Invasive ductal ca	No recurrence or metastasis
3	Anthoniammal	40	14420	Pre menopausal	II a	ER& PR positive	Lt. MRM+ Oophorectomy+CT	Invasive ductal ca	No recurrence or metastasis
4	Ammukutti	70	16831	Post menopausal	I	ER& PR positive	Lt. MRM+ HT	Atrophic scirrhous ca	No recurrence or metastasis
5	Lalitha	48	27514	Pre menopausal	II a	ER & PR Negative	Rt. MRM+ Oophorectomy+CT	Invasive ductal ca in fibrocystic disease	No recurrence or metastasis
6	Meena	28	28014	Pre menopausal	II a	ER & PR Negative	Rt. MRM+ Oophorectomy+CT	Invasive ductal ca	No recurrence or metastasis
7	Lingammal	55	28329	Post menopausal	II a	ER & PR Negative	Rt. MRM + CT	Invasive ductal ca	No recurrence or metastasis
8	Shanthamani	40	46820	Pre menopausal	II a	ER & PR Negative	Lt. MRM+ CT	Invasive ductal ca	No recurrence or metastasis
9	Ranjithamary	61	51632	Post menopausal	I	ER& PR positive	Lt. MRM+ HT	Invasive ductal ca	No recurrence or metastasis
10	Bakkiyam	57	53749	Post menopausal	II a	ER & PR Negative	Lt. MRM+ CT	Invasive ductal ca	No recurrence or metastasis
11	Pappathi	37	54302	Pre menopausal	II a	ER & PR Negative	Lt. MRM Oophorectomy+CT	Invasive ductal ca	No recurrence or metastasis

S.NO	NAME	AGE	I.P NO	MENOPAUSAL STATUS	STAGE	RECEPTOR STATUS	TREATMENT	HPE TYPE	FOLLOW UP
12	Krishnaveni	56	59683	Post menopausal	II a	ER & PR Negative	Rt. MRM+ CT	Invasive ductal ca ca	No recurrence or metastasis
13	Manimekalai	40	645	Pre menopausal	II a	ER& PR positive	Rt. MRM+ Oophorectomy+CT	Invasive Ductal ca	No recurrence or metastasis
14	Saraswathi	70	1016	Post menopausal	I	ER& PR positive	Rt. MRM + HT	Invasive ductal ca	No recurrence or metastasis
15	Mary	44	1965	Pre menopausal	II a	ER & PR Negative	Rt.MRM with TRAM reconstruction+CT	Invasive ductal ca	No recurrence or metastasis
16	Jayalakshmi	42	2411	Pre menopausal	II a	ER & PR Negative	Lt. MRM+ Oophorectomy+CT	Invasive ductal ca	No recurrence or metastasis
17	Mary	59	5673	Post menopausal	II a	ER & PR Negative	Lt. MRM+CT	Invasive ductal ca	No recurrence or metastasis
18	Pappathi	55	6106	Post menopausal	II a	ER & PR Negative	Lt. MRM+CT	Invasive ductal ca	No recurrence or metastasis
19	Amalorpava mary	56	6125	Post menopausal	II a	ER & PR Negative	Rt. MRM+CT	Invasive ductal ca	No recurrence or metastasis
20	Mani	68	6153	Post menopausal	II a	ER& PR positive	Rt.MRM+HT	Medullary ca	No recurrence or metastasis
21	Thulasi	50	6375	Pre menopausal	II a	ER & PR Negative	Rt. MRM+CT	Invasive ductal ca	No recurrence or metastasis
22	Lalitha	47	7119	Pre menopausal	I	ER& PR positive	Rt. Breast conservation surgery axillary clearance+RT+CT	Invasive ductal ca	Seroma.No recurrence or metastasis

S.NO	NAME	AGE	I.P NO	MENOPAUSAL STATUS	STAGE	RECEPTOR STATUS	TREATMENT	HPE TYPE	FOLLOW UP
23	Palaniammal	49	8736	Post menopausal	II a	ER & PR Negative	Lt. MRM+CT	Invasive ductal ca	No recurrence or metastasis
24	Pappammal	65	10119	Post menopausal	II a	ER & PR Positive	Rt. MRM+HT	Invasive ductal ca	No recurrence or metastasis
25	Shailaja	50	10446	Pre menopausal	II a	ER & PR Positive	Lt. MRM+ Oophorectomy+CT	Invasive ductal ca	No recurrence or metastasis
26	Shanthi	33	11550	Pre menopausal	II a	ER & PR Negative	Lt. MRM+ Oophorectomy+CT	Invasive ductal ca	No recurrence or metastasis
27	Indirani	53	12873	Post menopausal	II a	ER & PR Negative	Lt. MRM+CT	Invasive ductal ca	No recurrence or metastasis
28	Karuppathal	67	17101	Post menopausal	I	ER & PR Positive	Lt. MRM+HT	Invasive ductal ca	No recurrence or metastasis
29	Saraswathi	45	24963	Pre menopausal	I	ER & PR Negative	Lt. MRM+ Oophorectomy+CT	Invasive ductal ca	No recurrence or metastasis
30	Kuttiammal	50	26641	Post menopausal	II a	ER & PR Positive	Lt. MRM+HT	Colloid ca	No recurrence or metastasis
31	Kandiammal	32	27793	Pre menopausal	II a	ER & PR Negative	Rt. MRM+CT	Invasive ductal ca	No recurrence or metastasis
32	Indira	40	35430	Pre menopausal	II a	ER & PR Negative	Lt. MRM+CT	Invasive ductal ca	No recurrence or metastasis
33	Shanthi	43	46286	Pre menopausal	II a	ER & PR Negative	Rt. MRM+CT	Invasive lobular ca	No recurrence or metastasis

ER&PR - Estrogen and progesterone receptors, MRM- Modified radical mastectomy, CT– Chemotherapy, HT – Hormone therapy, RT-Radiotherap